

*Upper Missouri River Breaks National Monument  
Interpretive Center*

## Teacher's Guide

# High School Activities

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## Art from the Breaks



During the 1830s, two important artists traveled the Upper Missouri River Breaks area: George Catlin and Karl Bodmer. Although they may have been in the region nearly at the same time and though they painted and sketched similar scenes (landscapes and Native Americans), their artistic style and their life background were much different.

Bodmer was born in Zurich, Switzerland in February, 1809. He studied painting and drawing under his uncle and continued his studies in France. While on a trip through Germany in 1832, he met Prince Maximillian zu Weid, who was quite fascinated with natural history of other lands. Prince Maximillian was searching for a professional artist to accompany him on a trip to North America; Bodmer signed on. The two traveled up the Missouri River, re-tracing the journey of Lewis and Clark that had taken place nearly 30 years earlier. Bodmer was the last artist able to paint the Mandan Indians of North Dakota; in 1837, a smallpox epidemic nearly wiped out the entire Mandan nation. Additionally, Bodmer painted portraits of Sioux, Blackfeet and other tribes while Maximillian researched and studied the zoology and botany of the areas. Bodmer completed more than 80 painted works of the expedition taken with Maximillian, creating some of the greatest works of his career. Bodmer returned to France, never to see America again. He died in 1893.

Catlin was born in Pennsylvania in July 1796. He had a brief career as a lawyer, but painting “the vanishing race” of American Indians was his passion. He traveled with William Clark on a diplomatic mission up the Mississippi River into native territory. St. Louis became his home, and Catlin took five trips into Native American lands between 1830 and 1836. In 1838, he traveled the Missouri River, an adventure that would bring him to the Breaks and beyond. Here, he met and painted the Crow, Assiniboine, and Blackfeet. When Catlin returned east, he assembled these paintings and the numerous artifacts into an “Indian Gallery”, and he began presenting public lectures. Catlin traveled with his Indian Gallery to major cities including Pittsburgh, Cincinnati, and New York, and eventually overseas to London, Brussels and Paris. The French art critic Charles Baudelaire remarked on Catlin's paintings, “M. Catlin has captured the proud, free character and noble expression of these splendid fellows in a masterly way.” However, Catlin ran into financial troubles, and so he tried to persuade the American government to purchase his collections; those attempts failed. He was forced to sell his works of more than 600 pieces to a private collector in 1852. These and other art works by Catlin were eventually donated to the Smithsonian Museum. He died in New Jersey in 1872. (note: this date is significant – it’s the date Yellowstone National Park was created!)

### Objective:

Compare and contrast the life and artistic style of George Catlin and Karl Bodmer. In what ways were they similar in lifestyle and in artistic style? In what ways were they different? Why do you think the two artists were so intrigued by the natural and cultural aspects of “frontier America”?

Now, in your journal create your own work of art representing the Upper Missouri River Breaks area and what you see today. How are your observations today similar to and different from what Catlin and Bodmer might have seen in the 1830s?

Learn more about these incredible artists at the following websites:

Catlin: <http://www.georgecatlin.org/>

Bodmer: <http://www.wildlifeart.org/artists/artistDetails/index.php?aID=301>

Both:

<http://www.artesmagazine.com/2011/02/the-american-frontier-native-american-identity-and-western-expansionism-through-artists-eyes/>

**Extension: Learning to Focus**

Take a walk along the river and find a comfortable place to sit – maybe under a tree or on a rock. While you sit quietly look around you – what do you see? Perhaps a blue heron is standing in the water waiting for its next meal. Maybe pelicans are floating on the water. Perhaps a tree is waving its branches in the wind. In the space below quickly sketch a scene that you see. Make this just a rough sketch, don't worry about detail yet. If you do not have enough room in the space below use a blank piece of paper in your journal.

Next, with one hand put your last four fingers onto your thumb in a circular shape, creating a hole with your fingers. Now hold this up to one of your eyes to look through – like using half a pair of binoculars (called a “monocular”). Use your monocular to focus on one thing within the rough scene you just sketched. Study this one thing for a few moments very carefully. Use the space below to draw what you’ve focused on and use as much detail as you can in your drawing (or again, you can use your journal if you don’t have enough room on this page).

What happened when your mental focus went from a rough sketch to a more detailed drawing? Did your concentration change? When you were making your rough sketch did your mind take in more details like sounds, smells, or other activity around you? What about when you were focusing on one object in more detail – were you aware of the same sounds and distractions or did your focus strengthen your powers of concentration?



## **Birds of the Breaks**

Do with Audubon info and functions of beaks...

### Background:

A variety of bird species consider the Missouri River Breaks area home. Songbirds, such as robins, woodpeckers, and yellow warblers, and shorebirds and waterfowl, including great blue herons, American white pelicans, and mallard ducks, can be seen. Different birds require different types of habitats and different species have their unique niche in the environment.

### Activity 1:

During your travel through the area, keep a log as to the type and number of birds you encounter... or even hear! Use the Montana Bird Checklist included with this packet. Perhaps you will hear a bird and never see it. If so, write down what that bird sounds like and see if you can identify it later with the help of a bird identification book or a CD of bird songs. Listen and look for birds during all times of the day, even at night. Owls and nighthawks, for example, are more active during the evening and night. Before going to bed each night during your trip, compare your list of birds seen and heard with lists of your campmates. At the end of your journey, choose someone to log the total number of birds encountered/heard during your river trip and the number of different species.

How many different species did your group see and/or hear?

How many total birds were encountered on your expedition?

How many different species did you personally identify?

How many total birds did you personally see and hear on the trip?

### Activity 2:

A bird's beak has a special function. Some beaks are made to scoop up fish (i.e., the pelican's) while others are used to stab or grab prey (i.e., great blue herons getting a frog). Some beaks are built for cracking seeds (chickadee), while others are needed to tear flesh (bald eagles). As you encounter birds on your river journey, record in your log how the birds you've seen use their beaks – what might those birds eat and what other functions do their particular beaks serve? Share your thoughts with your campmates.

### Activity 3:

John James Audubon was a noted wildlife artist during the 1800s. Although he did not found the conservation organization which bears his name (The Audubon Society), his drawings and studies of birds raised greater awareness and understanding of the diverse bird species in America. Raised in France, Audubon came to America in 1803 at the age of 18. His noted bird portraits, garnered from travels he undertook throughout America, stemmed from his hobby of drawing animals, particularly birds. Take time while you're traveling the Missouri and sketch some of the birds that you see on our journey.





## Calculating Missouri River Statistics

Communities rely upon water sources, and therefore, many communities, especially during the pre-1900s, were built along waterways, such as rivers. Fort Benton, for example, was established during the time of the fur trade in the early 1800s, and increased in population during the mid-1800s when steamboats navigated the Upper Missouri River.

Objective: Students will use math calculations to discover the mean, median and average of community populations along the Missouri River in Montana. Students will also use math calculations to find the mean, median and average of water flow along the Upper Missouri River, from Fort Benton to the James Kipp Recreation Area.

### Montana Communities Along the Missouri River:

<u>Name of Town</u>	<u>Population Estimate (2009)</u>
Townsend	2,070
East Helena	1,640
Helena	25,780
Wolf Creek	735* (not Census verified)
Cascade	770
Great Falls	59,370
Fort Benton	1,450
Fort Peck	215
Wolf Point	2,560
Poplar	885

### Average Water Flow of the Upper Missouri River throughout a typical year:

<u>Month</u>	<u>Flow Rate</u>
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

## Student Worksheet

### Math Language You'll Need to Know for this Activity:

- mean the sum of the data divided by the number of pieces of data
- median the middle number in a set of data
- mode the item that appears most often in a set of data

Please answer the following questions regarding community populations:

1. What is the range of the Missouri River community populations?
2. What is the mean of the populations?
3. What is the median?
4. What is the mode?
5. What does the mean tell you about this set of data?
6. Does the mean or median represent the average town along the Missouri River? Why?
7. Are there population relationships you can find for the towns listed?
8. What graph would display this data best? Draw this graph.
9. Why do you think some communities are so much larger than others? What other factors might be at work?

Please answer the following questions regarding Upper Missouri River Flow Rates:

1. What is the range of the Upper Missouri River flow rate?
2. What is the mean of the flow rate?
3. What is the median?
4. What is the mode?
5. What does the mean tell you about this set of data?
6. Which term, mean or median, represents the average flow rate of the Upper Missouri River?
7. What month has the greatest flow rate? The least flow rate?
8. What graph would display this data best? Draw the graph.
9. What factors might inhibit flow rate? What factors might increase flow rate?

## Crossword Clues

### Across

4. This outlaw had a hideout in the Missouri River Breaks area and often robbed banks and trains with Butch Cassidy and the Sundance Kid!
6. One way to cross the Missouri River in the Fort Benton area, whether on foot or by car - this type of river crossing is also found in other areas of the United States, including near New York City!
7. When this reptile shakes its tail, it is saying "Please don't step on me", which is a good idea, so step away or go around.
8. When hiking and camping along the Missouri River, please leave the area as natural as you found it - in other words, Leave No \_\_\_\_\_.
10. A type of boat many people still use today to travel the Missouri River.
11. This large mammal once roamed the Plains in the millions; by 1900, they were almost extinct.
12. There are two types of this fish found in the Missouri River; one is considered an endangered species.
13. The president who signed the proclamation establishing the Missouri Breaks National Monument in January 2001.
15. There are two species of this bird found in the Breaks area - one often eats fish and is found perched in trees along the river, the other can be found in the cliffs along the river and soars above the prairie looking for rodents; the bald and golden \_\_\_\_\_.
17. The fur company that was successful in establishing forts in the Missouri River Breaks area and in trading with the Blackfeet tribe.

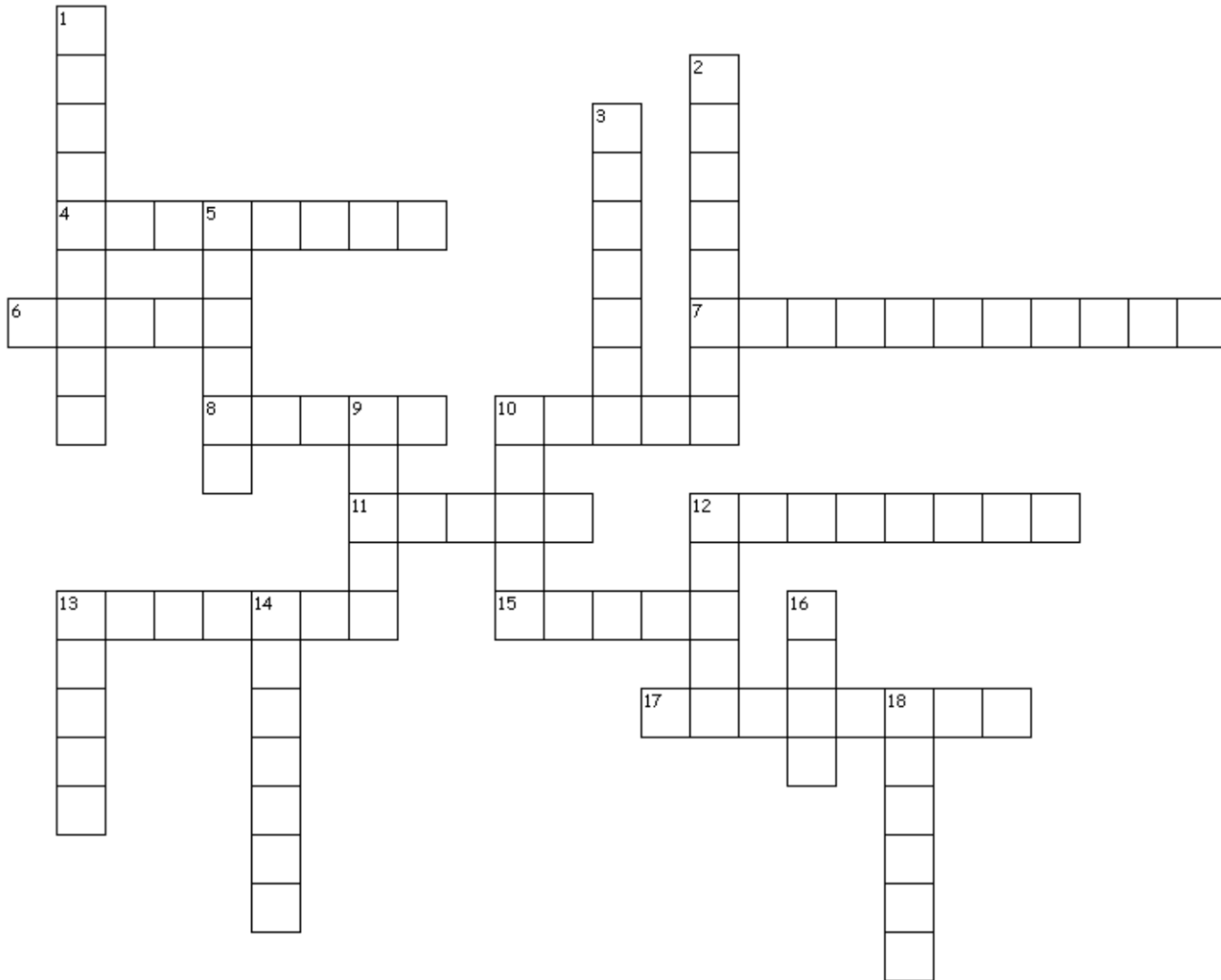
### Down

1. A tribe of Native Americans that called the Missouri Breaks area their territory; Captain Lewis encountered a group of them when he returned to the Missouri River area in 1806.
2. Chief Joseph was one of the chiefs of this tribe led that traveled through Yellowstone Park, into the Missouri Breaks, and toward Canada, fleeing from the Army during the 1870s.
3. A wild sheep found in many parts of the west, including the Missouri Breaks
5. This grayish-brown dog-like animal eats mice and is often seen in the Monument.
9. A log \_\_\_\_\_ was the type of house many homesteaders lived in when they came to the Breaks to set up their farms.
10. The \_\_\_\_\_ cherry tree provides food for birds and once was used by Native Americans to create their bows.
12. A type of boat used to transport furs and other goods up and down the Missouri River during the 1800s.
13. The explorers who traveled the Missouri River together in 1804, opening the West, were Lewis and \_\_\_\_\_
14. This type of person hunted beaver and sold their pelts during the early 1800s.
16. A military outpost.
18. You need to watch out for this prickly plant so that you don't get spines on your feet!

## People, Plants and Animals of the Missouri River Breaks

Using the clues on the next page, see how many answers you can find about the people, plants and animals of the Missouri River Breaks to answer the crossword puzzle below. For help, visit the Interpretive Center's website at

[http://www.blm.gov/mt/st/en/fo/lewistown\\_field\\_office/umrbnm/interpcenter.html](http://www.blm.gov/mt/st/en/fo/lewistown_field_office/umrbnm/interpcenter.html) or the BLM's Missouri River Breaks National Monument website at <http://www.blm.gov/mt/st/en/fo/>



# Where in the World Am I?! A GPS Activity

## Materials Needed:

GPS Receiver	Natural Area for Observation
Pens/Pencils	Journal Pages (see back of this booklet) or Notebook
Thermometer	Digital Camera (optional)
Other Weather Equipment for measuring air pressure and humidity (optional)	

## Overview:

You will use a GPS unit and GPS data (or coordinates) to mark five spots to conduct observations. Record your waypoints on your data sheet (see Appendix 1). Then, you and your campmates will see if you can find others' observation locations using your GPS units.

## Instructions:

1. Divide into pairs and choose an outdoor observation point (or way point).
2. Use your GPS receiver to determine the latitude and longitude of your spot and record that in a notebook or a journal page in the back of this booklet. This is your first way-point. Give it a "site name".
3. Record observations about the area and write down things you think are important. If you have a digital camera, you can take pictures of the area and things you observe.
4. After about five minutes of observation, move to another place and record the longitude and latitude of this spot; this is your second waypoint. Record observations about this area as well. Do you find similarities? What are some differences?
5. After another five minutes of observing, move to another location and record the longitude and latitude of this spot; this is your third waypoint. Record observations for about five minutes.
6. Repeat another two times so you have a total of five waypoints and five observation areas.
7. Re-gather with your group. Exchange GPS units and see if you can find the waypoints and locations of where your campmates conducted their observations based on their photos and/or observations.

Activity Based on two separate activities: "Mapping the Refuge"

<http://sciencespot.net/Media/GPSMappingRefuge.pdf>

and Virginia Community College website:

<http://vccsgis.org/?q=resource/file/introductory-gps-activity-2-beginner-level-high-school>

## Data Sheet for GPS Activity

Name \_\_\_\_\_

Partner's Name \_\_\_\_\_

Original GPS Device # \_\_\_\_\_

**Original Data Table 1**

Waypoint #	Site Name	Latitude	Longitude	Key features and other description of the location
1				
2				
3				
4				
5				

**New GPS Device #** \_\_\_\_\_

**New Data Table 2**

Waypoint #	Site Name	Latitude	Longitude	Key features and other description of the location
1				
2				
3				
4				
5				

# Homesteading the Missouri Breaks

The Homestead Act of 1862 gave Americans title to 160 acres of undeveloped land west of the Mississippi River. The law required homesteaders to file an application, improve the land, and file for deed of title. Much of the prime land, especially near or along waterways, became settled. Therefore, Congress enacted another homesteading law in 1909 called the Enlarged Homestead Act. This law targeted land suitable for [dryland farming](#) and increased the number of acres to 320. In 1916, the [Stock-Raising Homestead Act](#) targeted settlers seeking 640 acres of [public land](#) for [ranching](#) purposes.

The 19<sup>th</sup> century farmer on the Great Plains was an important part of the food production chain. To get their products to market, they depended on the efforts of many people. The farmer was, however, even more dependent on nature. The unpredictable weather of the Great Plains, and specifically of the Missouri River Breaks area, tested the resolve of many people trying to earn a living on the landscape.

Settlers did not arrive in the Missouri River Breaks area until the early 20<sup>th</sup> century. Climate, lack of water, and poor soil plagued the homesteaders, and within a few years, the majority of landscape belonged to large ranchers who didn't depend upon crops to make a living. Several historic structures still stand within the Missouri Breaks National Monument, testifying to the homesteading history of the region.

## Activity 1: Homesteading Decisions

Instructions:

1. Copy and cut out the “Homestead Cards”.
2. Copy and cut out the “Situation Cards” and place them in a container.
3. Divide students into six groups and give each group one of the “Homestead” cards. Each “Homestead” will begin with the same number of livestock: four horses, two milk cows, three pigs, and 10 chickens.
4. Give each “Homestead” two turns at picking a situation card from the bag.
5. Based on the information found on their “Situation” cards, have groups adjust their livestock numbers on their “Homestead” card.
6. Next, inform the students that in order to survive the next year they must have at least:
  - 4 horses to plow the fields
  - 1 milk cow
  - 4 chickens for eggs
  - 2 pigs for food
7. Using the four options below, have each group assess their livestock situation and decide what action they will take. Some possible actions might include the following:
  - Sell some of your animals to build a new house.
  - Sell the homestead and move back to the East.
  - Ask your neighbor for help with the spring plowing in return for some food.
  - Make the best of your situation and hope for a better crop next year.
8. Have each group share its decision and the outcome of its decision.

## Activity 2: You're a Homesteader...Now What?!

Ask the students to imagine that they are homesteaders in 1905. They and a spouse have just arrived on their Missouri Breaks claim, which is located 20 miles from the nearest town and two miles from a creek. Their belongings include a team of horses, a wagon, a few household furnishings, some food staples, and \$100. Ask the students these questions and have them discuss their answers with the group: “What will you do?” “How will you use your money?” “How will you use your time?”

Use the following as a guide and have students write their scenario and answers to the questions to be discussed in their notebook/journal. You may want to pair students so that the “husband and wife” can collaborate as they “plan their life together” on the homestead. Have them sketch their plot of land and any buildings, such as a home, barn, etc., in their journal/notebook.

- Each homesteader started with 160 acres or a quarter section. A section was one mile square.
- Decide how many years you have been on your claim (one to five).
- Are there any trees on your land? If not, will you plant some and if so, what type(s) will you plant? What will these trees be used for?
- What will you use for a water supply? How will you get water to your property?
- Is the land flat? If not, indicate what the contours are like and how that might impact what crops you plant, where you build your home, etc.
- Decide what kind of livestock, if any, you have.
- Will you plant crops to sell? If so, what kind(s)? Choices include, but are not limited to sod corn, sod potatoes, corn, hay, oats, potatoes, rye, wheat, fruit trees, other trees, turnips, and carrots. Decide how many acres of each crop you have planted or are going to harvest.
- In your journal, sketch your cabin or sod house and any outbuildings, such as a barn. Any outbuildings were usually placed up to 20 yards away from the home in case of tornadoes or fire...hoping to prevent debris from hitting the home.
- Include a vegetable garden within a reasonable distance of the home.

After giving students sufficient time to “plan their homestead”, ask them to share with the group how they planned to use their 160 acres and to explain their choices and, where appropriate, the acreage allocated to each.

### **Activity 3: Planning and Budgeting for a Family**

Using the reference information on the pages that follow, ask the students to now imagine they are homesteaders with a family and they need to plan and budget for provisions to get them through the winter months. Here is the scenario to share with the students:

“There are six people in your family. You are to figure out what provisions you have to purchase at the store. Your budget allows \$ .30 per person per week. It is 20 miles to the store, and you go only three times a year (too difficult to get into town during the winter). Winter is approaching and you must plan to stock up for at least four months, maybe six. The food that you eat the most is potatoes and carrots, which you raise yourselves. Answer the following questions based upon the number of people in your family, the time of year, how much money you have to spend, and how to get the most bang for your buck! Be prepared to justify your choices!”

1. What is the maximum amount of money you will have available to spend?
2. What supplies do you have available now?
3. What provisions do you raise or do you expect to get through hunting, gathering, or barter?
4. How many meals will be eaten by the six people in the time between trips to town?
5. How many non-food supplies will you need? What will they cost? How much money will you have left for food?
6. Using the list of available items on the next page, plan what you are going to buy on this trip to the store.

Extension: How much do the items you selected for purchase cost today, do you think? When we return from our trip, plan a trip to the grocery store and find out then be prepared to share with the class what you found out!



## Activity References

Acre\* 43,560 square feet  
Meter 39 inches  
Mile 5,280 feet  
Quarter section 160 acres  
Section 1 square mile  
Ton 2,000 pounds  
 $C = 2\pi r$   
 $\pi = 3.14$

\*A plot of land 208.71 feet by 208.71 feet = 43,559.86 square feet

For the problems in the preceeding activities, consider a plot of land 209 square feet equivalent to an acre.

























### Food and Provisions Costs:

(Actual prices from 1877, other prices, quantities estimated)

Bacon \$ .10 per lb.	Apples .05 per 10 lbs.
Beans .06 per lb.	Crackers .30 per lb.
Butter .10 per lb.	Herring .10 per strip
Cheese .25 per lb.	Rice .05 per lb.
Coffee, green berries .40-.60 per lb.	Salt .05 per lb.
Eggs .06 per doz.	Sugar, refined .50 per lb.
Ham .10 per lb.	Milk .10 per gal.
Molasses .40 per gal.	Potatoes .25 per bushel
Sugar, heavy brown .18 per lb.	*Flour, white 7.00 per 100 lbs., 2.80 per 48 lbs.
	(*Price was dependent upon distance from mill)
Boots, fine \$ 6.00	Coal Oil \$ .35 per gallon
Mittens, sheepskin 1.00	Matches .05 per box
Pants 1.50	Shoe nails .10 per dozen
Shoes 2.00	Soap, large chunk .25 each

**Homestead Cards**  
(for use with Activity #1)

**Homestead Cards**

<p>The Hagadone Homestead</p> <p>2  4 </p> <p>3  10 </p>	<p>The Ervin Homestead</p> <p>2  4 </p> <p>3  10 </p>
<p>The Gist Homestead</p> <p>2  4 </p> <p>3  10 </p>	<p>The Middleton Homestead</p> <p>2  4 </p> <p>3  10 </p>
<p>The Nelson Homestead</p> <p>2  4 </p> <p>3  10 </p>	<p>The Cable Homestead</p> <p>2  4 </p> <p>3  10 </p>

(copy/cut)

**Homestead Situation Cards**  
(for use with Activity #1)

**Situation Cards**

<b>Summer rains make your wheat crop grow—buy a new horse to help with the harvest.</b>	<b>A grasshopper swarm eats your garden and wheat crop—sell one milk cow and two horses to buy food for the winter.</b>	<b>No rain in August causes your corn crop to wilt—sell six chickens for winter clothes.</b>
<b>A sudden thunderstorm strikes before you get all your animals in the barn—you lose one horse.</b>	<b>A fox raids your chicken coop—lose four chickens.</b>	<b>A hailstorm destroys your wheat crop—sell two horses and two pigs to buy seed for next year.</b>
<b>In a prairie fire you lose one milk cow, two horses, two chickens, and one pig.</b>	<b>With plenty of sunshine and rain, you harvest your corn crop and buy a new horse.</b>	<b>In a tornado your barn roof blows off and you lose one horse, four chickens, and one pig.</b>
<b>An early frost kills your potatoes—sell one pig to buy potatoes for the winter.</b>	<b>In a drought your well dries up—lose four chickens, one milk cow, and two pigs.</b>	<b>Healthy soil allows you to harvest a successful wheat crop—buy one milk cow.</b>

(copy/cut)



# Lewis and Clark on the Mighty Missouri

## Objectives:

Students will:

- discuss the importance of observation and attention to detail
- name several of the native tribes that Lewis and Clark met along their journey
- understand the impact of the Lewis and Clark expedition
- make their own assessment of the expedition.

## Background:

Lewis and Clark made significant additions to the zoological and botanical knowledge of the North American continent, providing the first scientific descriptions of nearly 300 plant and animal species, including the big sagebrush, arrowleaf balsamroot, bear grass, prairie dog, pronghorn, and grizzly bear. They described the people they met with details and wonder. They made the first attempt at a systematic record of the meteorology of the West, and less successfully attempted to determine the latitude and longitude of significant geographical points. In essence, the information contained in the journals of Lewis and Clark was invaluable. You can learn more about the explorers' discoveries at [http://www.nationalgeographic.com/lewisandclark/resources\\_discoveries.html](http://www.nationalgeographic.com/lewisandclark/resources_discoveries.html)

## Activity 1: Plants and Animals They Encountered

### **September 07, 1804**

Journal Entry by William Clark (regarding the prairie dog, then unknown to scientists)

... discovered a Village of Small animals that burrow in the grown (those animals are Called by the french Petite Chien) Killed one and Caught one a live by poreing a great quantity of Water in his hole we attempted to dig to the beds of one of those animals, ...



... Contains great numbers of holes on the top of which those little animals Set erect make a Whistling noise and whin allarmed Step into their hole.

### **September 07, 1804**

Journal Entry by John Ordway regarding the prairie dog

Shields killed a prairie dog, which was cooked for the Capt's dinner. the Captains went out with Some men of the party to See the Ground where those little dogs make their village & they found more than an acre of Ground covered with their holes, they attempted to drown Several of them out of their holes, but they caught but one which they brought in alive, they are a curious animal about the Size of a little dog, & of a grayish colour resembles them nearly except the tail which is like a Ground Squirrel. they will Stand on their hind feet & look ...

Imagine you are with the Lewis and Clark Expedition, and you encounter a plant or animal you've never seen before that lives in the Missouri River Breaks. Write a thorough description of that plant or animal. Perhaps it's something you've encountered on your canoe trip. You may also want to draw a picture of this particular plant or animal to help others who might read your journal envision

what you've encountered that they may never see. Remember that many people who read the Lewis and Clark journals after the explorers returned East would never see the organisms that Lewis and Clark encountered on their journey.

On your journey this trip, have you seen a plant or animal that you've never seen before? If so, discuss the experience – where and how did you encounter this “new discovery” and how did you determine what species it was?

### **Activity 2: Native Tribes They Encountered**

Listed below are several Native American tribes with whom the explorers interacted. Individually or in small groups, choose a nation from the list and research where they live or lived, their lifestyle and customs, and their social and governmental organization.

Many of today's tribal organizations use the Internet to communicate with their members and promote their culture. When you return from your canoe trip, research the tribe on the Internet, see if the tribe has a website, and if so, take some time to explore it.

Lakota Sioux	Pawnee	Osage	Crow
Blackfeet	Mandan/Hidatsa	Shoshone	Nez Perce
Salish (Flathead)	Yakima	Chinook	Clatsop

Meantime, in camp, imagine you are a member of one of these tribes and you encounter the Lewis and Clark Expedition. Do you welcome them or are you wary of them? What information can you share with the explorers that they may not know? Do you help or hinder their progress? What information do you think would be important to the explorers to learn from the tribe? Write down your thoughts from the perspective of an indigenous person as well as from the point of view of one of the captains of the expedition.

### **Activity 3: Impact of the Expedition**

Write a short commentary about the effect of the Lewis and Clark Expedition. You can write about the “success” of the expedition which resulted in discoveries of plants and animals never encountered by Europeans before or about the resulting westward expansion and settlement of the United States, or perhaps you prefer to write from the perspective of the loss of America's loss of indigenous environments and cultures.

## **Native American Culture in the Breaks**

The Missouri River Breaks served as hunting ground for many Great Plains tribes, including the Blackfeet and Crow. Additionally, the Nez Perce traveled through this area as they fled the Army in 1877, heading for Canada in their quest for freedom. As you canoe through the region and see tipi rings left from times gone by, envision the area teeming with wildlife and with little visitation from people, much as the Native Americans lived and roamed the landscape through the late 1800s.

The following activities will take you into a new culture and let you walk a mile in their moccasins for a brief time.

### **Activity 1: What's in a Name?**

According to Royal Hassrick's book, *The Sioux*, Lakota children were named in honor of a special event in the life of their parents or grandparents. As they grew older, an individual might adopt a name from a significant event in his or her own life. In his book, Hassrick describes a Lakota naming ceremony. After hosting a meal and giving gifts to the guests, the family would announce the child's name, "This child shall be known as Kills Buffalo in honor of his grandfather."

Hassrick interviewed Lakota people for his book. Some of their names included:

Charles Chasing Crane

Rose Running Horse

Mabel Standing Soldier

Irene Red Shirt

Think about stories told by or about your grandparents and their lives. Using this information, choose a name for yourself in the manner of the Lakota. Or, think of an experience you've had during your trip: did you see a great blue heron fishing for its dinner or a bald eagle soaring in the sky? Perhaps your Native American name can be part of your Missouri River Break experience. Share your thoughts with your campmates when you gather around the fire one evening. Be respectful of yourself and your river trip colleagues.

### **Activity 2: Debating the Issue**

After Lewis and Clark "opened up the West", settlers streamed across the Great Plains and over the Continental Divide. Sadly, both the environment and the Native culture were negatively affected by this "Manifest Destiny". Buffalo and other wildlife were slaughtered as were many Native American tribes; other tribes were moved to reservations, no longer allowed to roam the Great Plains that once was their home.

Your scenario: The year is 1872. The dwindling number of buffalo on the Great Plains is having a dramatic affect on several groups of people. In groups, debate a course of action agreeable to all groups. One student will serve as moderator. Your instructor will assign the other roles listed on the next page.

### **Activity 3: Using the Land**

As you can probably ascertain, Plains Indians already occupied land that the pioneer settlers claimed for homesteads and ranches. Think about the way the settlers used the land versus the way the Plains Indian tribes used the land. Hold a discussion between the two points of view and determine alternative ways the West might have been "settled".

### Extension: Communication

1. Think of the many ways we use to communicate with people; compare and contrast communication techniques today with those of the 1800s.
2. Sign language is a communication style that has survived the centuries. Review the pages titled “Indian Sign Language: Hand Signals to Communicate” (from the Park Service’s Nez Perce Teacher’s Guide), and attempt to communicate with your campmates using the hand signals and sign language techniques illustrated on those pages.
3. American Sign Language is a tool used to communicate with deaf people. Many believe ASL is derived from French Sign Language which was introduced to America in 1817. In that year a French teacher (Laurent Clerc) founded the first school for the deaf (in Connecticut) and began teaching FSL to Americans. Today’s ASL and FSL share similar elements, including a large amount of vocabulary. (source: National Institute on Deafness: <http://www.nidcd.nih.gov/health/hearing/asl.html>). Find out if any of the students know American Sign Language and have them teach the rest of the group sign. Also, ask students if they know anyone who is deaf – how do they communicate with that person? Think about celebrities anyone can think of who is deaf (actors/actresses, athletes, politicians, writers, etc) and share a round table discussion as to how these people became famous in spite of what some people consider a “handicap” or “disability”.

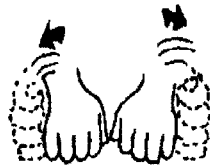
Activities derived from Jefferson National Expansion Memorial and Nez Perce National Historic Park, National Park Service.



## Indian Sign Language: Hand Signals to Communicate



**Arise**



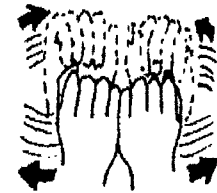
**Break**



**Ashamed or  
Bashful**



**Bear**



**Council**



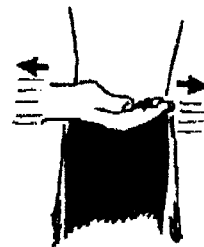
**Elk**



**Exchange or  
Trade**



**Honest or  
True**



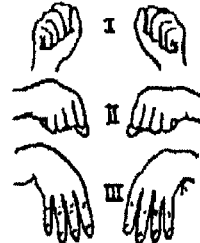
**Hungry**



**Jump**



**Many times**



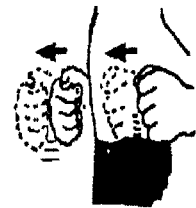
**Rain**



**Rattle**

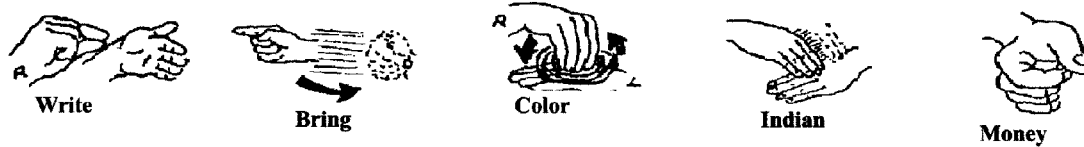


**Talk**



**Effort or  
Try**

## Indian Sign Language: Hand Signals to Communicate



Here are some sentences to try. First is a regular sentence followed by motion words to be used:

*What is your name?*

*I am hungry and want something to eat.*

*I have not seen you for a long time*

Question – you – called

I – hungry – food – want

long time – see – not



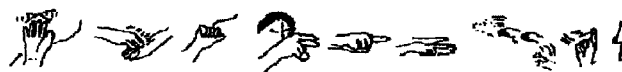
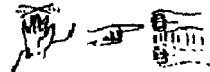
*Where do you live?*

Question – you – sit



*Who was that Indian I saw you with today?*

Question – Indian – I – saw – you – with – day – now



Using the pictures on this card, try this sentence on your own. Then make up sentence of your own.

*The Indians met in council to share good talk*

Indians – council – trade or council – talk – honest or true

**Role Playing Cards**  
(for use with "Debating the Issue" Activity #2)

<p><b>BUFFALO HUNTERS</b> We get paid money for buffalo hides. They are very valuable back east. Sometimes the soldiers give us free ammunition.</p>	<p><b>SOLDIERS</b> Killing off the buffalo will weaken rebellious American Indians. The sooner we can do this, the sooner we will have peace on the frontier.</p>
<p><b>SPORT HUNTERS</b> We love to hunt, especially the buffalo. We ride out west on passenger trains and shoot them right from the train. There is no shortage of buffalo.</p>	<p><b>FARMERS</b> Buffalo don't bother us much. We collect the bones to be used for fertilizer and bone china back east. Sometimes the Indians beg us for food.</p>
<p><b>FACTORY OWNERS</b> We need the hides from the buffalo for the leather belts that run our machines. We will pay good money for as many hides as we can get.</p>	<p><b>HISTORIAN</b> The killing must stop. Buffalo must not become extinct. Set aside Yellowstone as a place to preserve the buffalo and the wilderness for the future.</p>
<p><b>AMERICAN INDIANS</b> The Buffalo supply us with food, shelter, and clothing. The dwindling herds mean we have less of what we need to meet our basic needs. These ranchers have so many cattle, couldn't we have some for food?</p>	<p><b>MODERATOR</b> Assist the groups in coming to an agreeable solution. All parties must benefit, and the result must be peaceable. Record the process and results on the board.</p>

(copy/cut)





## Nature Journal

Being outdoors and watching wildlife and other things in nature can be enjoyable. Many people, past and present, have spent time in nature and found this time to be relaxing and inspirational. Writers such as Henry David Thoreau and Aldo Leopold observed the plants, animals, and seasons of the year to learn more about the natural wonders around us each day.

**Aldo Leopold** is considered by many to be one of the greatest conservationists of all time. What is a conservationist? \_\_\_\_\_

Mr. Leopold was born in Iowa in 1887. He was interested in the natural world as a child, and he spent many hours observing, journaling and sketching the area where he lived. He was one of the first employees of the U.S. Forest Service, which began in 1905. After many years of living in other states, Mr. Leopold moved back to the Midwestern United States, buying an old farm in Wisconsin and restoring the prairies and planting thousands of pine trees on the farm. He is most known for a book titled *A Sand County Almanac*, one of the most respected books about the environment that's ever been written. Mr. Leopold died in 1948, but his work is still remembered and his importance to conservation still carried on through the Aldo Leopold Foundation (see <http://www.aldoleopold.org>).

Another early American conservationist was **Henry David Thoreau**. He was born in 1817 and lived through the early years of the Civil War when black people were slaves on large farms in southern America. Mr. Thoreau is best known for his book *Walden* (or "Walden's Pond"), a place where he enjoyed living close to nature. To learn more about Thoreau, visit <http://plato.stanford.edu/entries/thoreau/>

Like Leopold and Thoreau, you, too, may find nature to be a wonderful place and simply enjoy spending time observing areas around you. These next few pages can help guide you into learning more about the natural wonders in your area. Like Thoreau and Leopold, you, too, may find inspiration in the natural world!

Using all of your senses (hearing, sight, smell and touch) spend time in nature – at a park, in a forest, near a stream or river. Use the following pages to write down ("record") what you see, smell, hear and touch (these are your observations). Do these observations at different times of the day and different weather conditions. What animals do you see? What types of animals might have been at this location before you arrived? (do you see scat, feathers, tracks of any kind?) Are birds singing or bees buzzing around? Can you smell flowers in bloom or the fragrance of freshly-fallen rain? Use these questions to guide you as you record your nature observations using the Nature Journal on the next few pages (you can make more copies of these pages if you like). Perhaps you'll want to write a story or draw a picture about what is happening or might have happened. These are your pages – express yourself! And enjoy yourself!

*Conservation is a state of harmony between men and land.* Aldo Leopold

*There can be no greater issue than that of conservation in this country.* Teddy Roosevelt

*The old Lakota was wise. He knew that man's heart away from nature becomes hard; he knew that lack of respect for growing, living things soon led to lack of respect for humans too. So he kept his children close to nature's softening influence.* Chief Luther Standing Bear



## My Nature Journal

*I love to be alone. I never found the companion that was so companionable as solitude.* Henry David Thoreau

Today's date is: \_\_\_\_\_ The time is \_\_\_\_\_

What's the weather like? \_\_\_\_\_

\_\_\_\_\_

Where are you? Describe the location. \_\_\_\_\_

\_\_\_\_\_

What do you see? \_\_\_\_\_

\_\_\_\_\_

What do you smell? \_\_\_\_\_

\_\_\_\_\_

What do you hear? \_\_\_\_\_

\_\_\_\_\_

What can you touch? How does it feel? \_\_\_\_\_

\_\_\_\_\_

What else is special about what and where you're observing? (for example, if there are people with you or near you, what are they doing? Describe other things you can see, smell, hear and touch).

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Draw some of the things you've observed (leaves, trees, animals, people).

Now, using the template on page 32 or your own notebook, take a few minutes to write a short story about your nature observations. Your story can be fiction or non-fiction.



## My Nature Journal

*In every walk with nature one receives far more than he seeks.*  
John Muir

Today's date is: \_\_\_\_\_ The time is \_\_\_\_\_

What's the weather like? \_\_\_\_\_

\_\_\_\_\_

Where are you? Describe the location. \_\_\_\_\_

\_\_\_\_\_

What do you see? \_\_\_\_\_

\_\_\_\_\_

What do you smell? \_\_\_\_\_

\_\_\_\_\_

What do you hear? \_\_\_\_\_

\_\_\_\_\_

What can you touch? How does it feel? \_\_\_\_\_

\_\_\_\_\_

What else is special about what and where you're observing? (for example, if there are people with you or near you, what are they doing? Describe other things you can see, smell, hear and touch).

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Draw some of the things you've observed (leaves, trees, animals, people).

Now, using the template on page 32 or your own notebook, take a few minutes to write a short story about your nature observations. Your story can be fiction or non-fiction.



## My Nature Journal Stories and Drawings

*Adopt the pace of nature: her secret is patience.* Ralph Waldo Emerson



# Soil Layers and Groundwater

## Objectives:

Students will:

- compare the difference in various soil types
- analyze how infiltration changes with different soil types
- describe the challenges of recharging a water table due to various rock types.

## Materials Needed:

- 4 large paper (or plastic) cups
- 1 cup gravel
- 1 cup sand
- 1 cup topsoil
- 1 cup clay soil
- shallow pan
- food coloring
- 1 quart of water
- stop watch
- magnifying lens

## Procedure:

1. Discuss various rock and soil types found in the ground above the water table. Some examples are sand, silt, clay, gravel, limestone, sandstone, granite, etc. Realizing that there are many layers between the ground and the water, ask the students if it is easy for water to reach the water table. Predict which of the soil types will be the fastest and slowest for the water to travel through. Do you think these exist under the earth where you live?

2. Have the students examine each type of soil. Have them rub a pinch between their fingers. What do they feel like? What do they smell like? Investigate each under the magnifying lens. How large is a particle of each one? A sand particle is about 0.4 mm clay is about 0.004mm per particle. Which would hold more water between the particles? Which would hold the least?

3. Punch four small holes in each cup and fill each cup with one type of soil material.

4. Place about 4 drops of food coloring in the quart jar of water. Place ½ cup of colored water into the measuring cup.

5. Have one of the students get ready with a stopwatch to time the procedure. Hold one of the cups over the pan and pour ¼ cup of the colored water into the cup. Time how long it takes the first colored water to reach the pan. Measure the water that collected in the pan. Record your information.

6. Repeat procedure for all four cups.

7. Discuss the following questions:

- Which one took the longest?
- Which type returned the most water to the pan below? Why?
- When does water enter the soil?
- What happens when water moves through soil layers?
- Is this an easy path for water to take?
- Can water move through all types of layers? Why or why not?
- What would happen if the water were to intercept a cave?
- Can the soil layers clean the water?

- Do various soil types have cleaning qualities? How? (Bacteria, sediment and other insoluble forms of contamination get trapped in the soil pores; some chemicals are absorbed or react with the soil and are prevented from entering the groundwater; plants and soils use potential pollutants like nitrogen as nutrients decreasing the amount that gets into the water.)
- Which type of soil would be most efficient at cleaning water?
- What events on the surface could cause the water to need to be cleaned?
- What happens if these contaminants get into a cave?

Additional Discussion:

Recharge rates of water tables depend on the amount and rate of water moving through the surface, soil, and rocks beneath. Discuss the following questions with your group:

- Which is better – a fast rate of recharge or a slow one? Why?
- Would water be more contaminated with faster recharge or slower?
- What is the benefit of having a slower recharge rate? A faster rate?
- How will an aquifer fill if there is a lot of water being removed quickly and the recharge is slow?
- In real life, how do people balance these issues?

Activity from Wind Cave National Park, National Park Service



## **The Sounds of Solitude – Listening to Nature**

Nature can be very noisy, but in a different way than the sounds of people and human activity, particularly in urban settings. Birds and other animals use their calls to communicate with one another. Ever hear a squirrel chattering? It's probably scolding you, telling you to get away from its territory. Some animals cry out a warning when danger approaches; for example, prairie dogs warn one another when a hawk flies overhead or a coyote or human approaches. Even though you may mean them no harm, they will presume you are a danger to them because you are bigger than they are.

You can have an interesting experience by just listening to nature. While in camp, sit quietly for 5 or 10 minutes, close your eyes and listen to the sounds of nature. Do this once in the morning and once in the evening. Do you hear the same sounds or do you hear different ones? Listen not only for birds and other animals, but also listen to the wind and the river. Are tree leaves rustling in the breeze? Do you hear frogs croaking nearby? Maybe the buzz of insects? Write down what you hear. Can you identify what makes each sound. List as many as you can. Did you hear a sound you could not identify? How might you learn what those sounds are? Compare notes with your campmates.

### **The Sounds of Solitude**

Write down what you hear, where you hear the sounds, and the time of day that you heard them. What type of creature or object may be making the sound? Can you also see it as well as hear it?

**Morning**

**Afternoon**

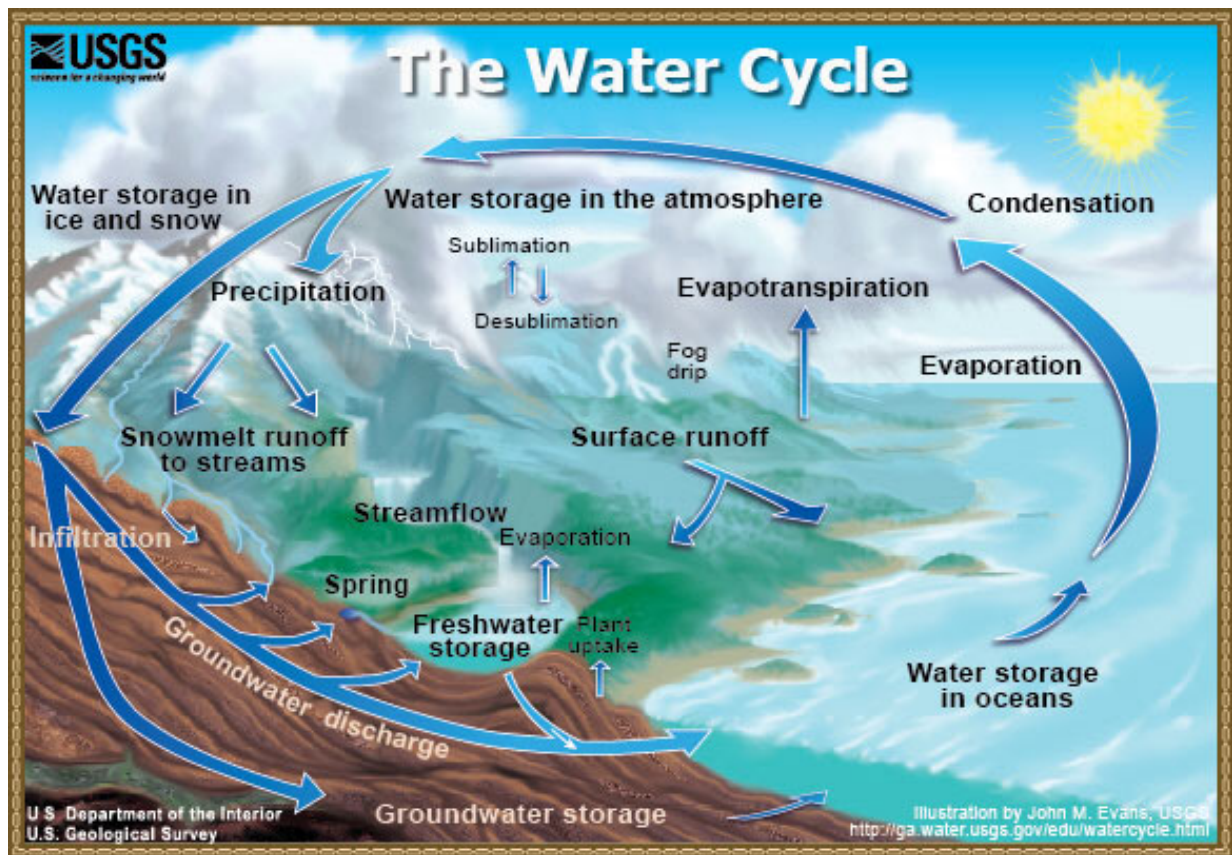
**Evening**

Activity based on "The Sounds of Nature" activity from "The Book of Stuff to do Outside" by DiscovertheForest.org.



# The Water Cycle

Graphics Source: U.S. Geological Survey





## **The Water Race (an in-class activity)**

### Objectives:

Students will

- define permeability and porosity
- predict and test permeability of different rock types
- relate make-up of rock layers and use of the area to permeability.

### Materials Needed:

- 2 20-oz. Plastic soda bottles, one filled with gravel, one filled with sand
- 2 20-oz plastic soda bottles filled with water
- pieces of sandstone and limestone
- geology cards

### Background:

Water moves in a continuous cycle between the air, ground, plants, and animals. The roots of a plant might use the water that soaks into the earth. But if no plant captures the water, it might travel downward through the rocks and soil. The movement is called infiltration. The rate that water travels through the rock depends on the permeability of the rock layers. The spaces, or pores, in the rock allow the water to travel through it. If we magnify rocks such as limestone or sandstone many times, we would see that they are full of tiny holes. These spaces have an enormous ability to carry and hold water. The measure of space available to hold water is called porosity. Igneous rocks, like granite, have formed in such a manner that the minerals are very close together and water can not easily get into it. Sandstone is very porous; the water will be easily soaked up within the spaces or pores of the rock.

How easily the water travels through the rock is called the permeability. In rocks, permeability depends on the size of the pores and on how connected they are to one another. Rocks, such as limestone are porous but they also crack very easily allowing the water to travel through. Rocks often associated with caves are limestone, sandstone and shale or clay. Shale or clay is impermeable; the water will not travel easily through the rock.

How the water travels through the rock determines how much water gets into the ground. The availability of groundwater varies in different areas of the world and is determined by the permeability or porosity of the type of rock in that area. We will be investigating groundwater in limestone and sandstone. Bedrock can also filter water as it seeps into the ground encountering the different rock types.

### Procedure:

1. Have the students investigate the piece of sandstone. How does it feel? Is it gritty or sandy? Slowly pour water on it. What happens to the water? Why? Show the students the cards and ask them which illustration represents sandstone. Have them recall how sandstone forms.

2. Have the students investigate the limestone. How does it feel? Have them slowly pour water on the limestone. What happened to the water? Why? Since most caves form in limestone, ask them to predict how the water could get into the rock level. Show the students the cards and ask them which illustration represents limestone. Have them recall how limestone forms.

3. Have the students investigate a piece of clay. How does it feel? Does it feel like either of the other rocks? Have them pour water on the clay. What happened to the water? Why? Show them the cards and ask them which illustration represents clay. How does shale or clay form?

4. Show students the bottle of sand and the bottle of gravel. Ask them to determine which type of rock each bottle represents – limestone or sandstone. Ask the student to predict which type of rock they think the water will travel through the fastest.

5. Ask for 4 volunteers to perform the water race. The volunteers will form pairs, one pair with the sandstone, one with the limestone. One person will hold the rock bottle; the other person will slowly pour water into the rock bottle. The other team will be arranged the same.

6. When everyone is ready have the students with the water bottles pour water into the rock bottles without spilling any water. When one group “wins” the race by filling the rock bottle and all the spaces possible with water, have the other group stop. Discuss why the group won. What does that say about the permeability of the rock? How will the permeability of the rock affect the quality of the water entering into groundwater.

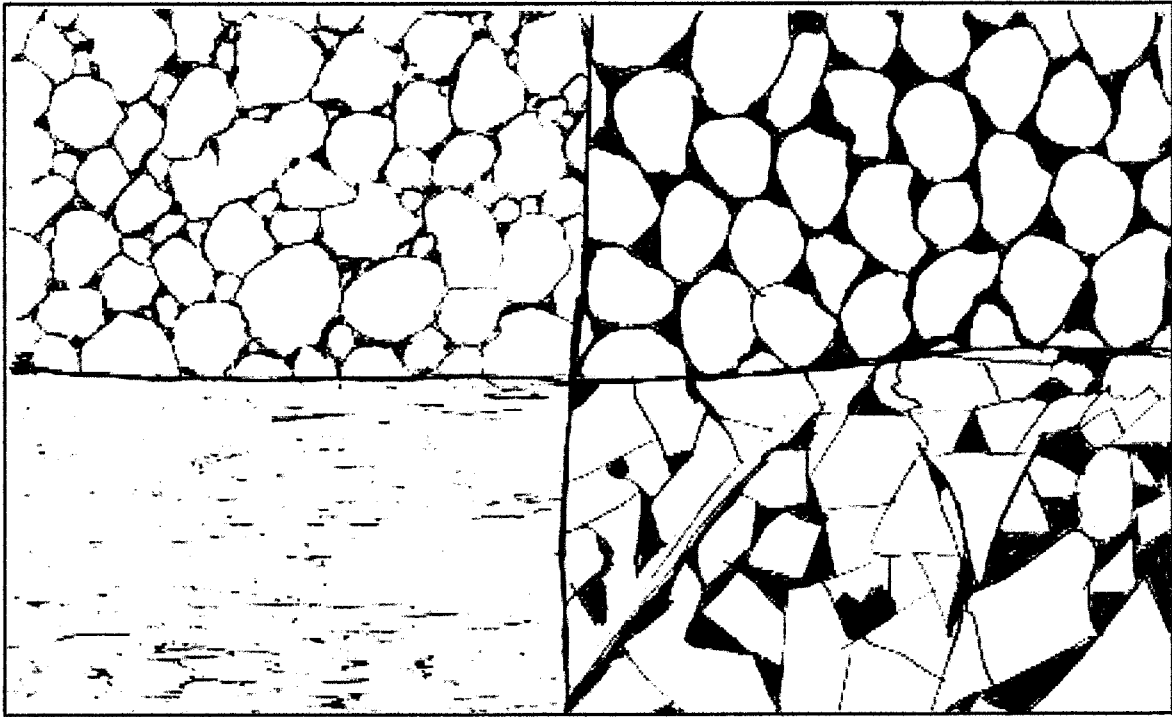
Discussion questions:

- Can bedrock affect the amount or rate of contamination to the groundwater?
- Would sandstone or limestone allow more contaminants?
- Which one would allow the contaminants to get there faster?
- Could this have an effect on a cave?
- What if there were a parking lot or houses over the cave?

Activity from Wind Cave National Park, National Park Service



## Geology Cards for The Water Race Activity







## Liquid Language

Water is essential to all life; it covers more than three-quarters of the earth's surface. Water has been the catalyst for settlement and hostility. As you explore aspects of the Missouri River, by canoe and by observation, think about the importance of water to you, your family, your community, your state, your world.

Complete the page titled "What is Water?" and "Missouri River Poetry". From these pages, you will create various types of poems, including a cinquain, a 5-stanza poem featuring a noun, adjectives and verbs (action words).

Read the examples of river poetry found on the next few pages of this booklet. Then, in a notebook write a few different types of poems about your experiences and thoughts on the Missouri River, such as free-style poem or a haiku, whatever style you'd prefer to write. Share your work with your campmates. Then, discuss why you think water stirs writers to write and painters to paint. Also, after you and your class have completed your river trip, you may want to submit your river poetry to River of Words, a website dedicated to students who write poetry, particularly poetry about water:

<http://www.mo-row.webs.com/>

### To the Mississippi

By Charles Timothy Brooks

Majestic stream! along thy banks,  
In silent, stately, solemn ranks,  
The forests stand, and seem with pride  
To gaze upon thy mighty tide;  
As when, in olden classic time,  
Beneath a soft, blue Grecian clime,  
Bent o'er the stage, in breathless awe,  
Crowds thrilled and trembled, as they saw  
Sweep by the pomp of human life,  
The sounding flood of passion's strife,  
And the great stream of history  
Glide on before the musing eye.  
There, row on row, the gazers rise;  
Above, look down the arching skies;  
O'er all those gathered multitudes  
Such deep and voiceful silence broods,  
Methinks one mighty heart I hear  
Beat high with hope, or quake with fear; —  
E'en so yon groves and forests seem  
Spectators of this rushing stream.  
In sweeping, circling ranks they rise,  
Beneath the blue o'erarching skies;  
They crowd around and forward lean,  
As eager to behold the scene, —  
To see, proud river! sparkling wide,  
The long procession of thy tide, —  
To stand and gaze, and feel with thee  
All thy unuttered ecstasy.  
It seems as if a heart did thrill  
Within yon forests, deep and still,  
So soft and ghost-like is the sound  
That stirs their solitudes profound.

# The River

By Ralph Waldo Emerson

And I behold once more  
My old familiar haunts; here the blue river,  
The same blue wonder that my infant eye  
Admired, sage doubting whence the traveller came,--  
Whence brought his sunny bubbles ere he washed  
The fragrant flag-roots in my father's fields,  
And where thereafter in the world he went.  
Look, here he is, unaltered, save that now  
He hath broke his banks and flooded all the vales  
With his redundant waves.  
Here is the rock where, yet a simple child,  
I caught with bended pin my earliest fish,  
Much triumphing,--and these the fields  
Over whose flowers I chased the butterfly,  
A blooming hunter of a fairy fine.  
And hark! where overhead the ancient crows  
Hold their sour conversation in the sky:--  
These are the same, but I am not the same,  
But wiser than I was, and wise enough  
Not to regret the changes, tho' they cost  
Me many a sigh. Oh, call not Nature dumb;  
These trees and stones are audible to me,  
These idle flowers, that tremble in the wind,  
I understand their faery syllables,  
And all their sad significance. The wind,  
That rustles down the well-known forest road--  
It hath a sound more eloquent than speech.  
The stream, the trees, the grass, the sighing wind,  
All of them utter sounds of 'monishment  
And grave parental love.  
They are not of our race, they seem to say,  
And yet have knowledge of our moral race,  
And somewhat of majestic sympathy,  
Something of pity for the puny clay,  
That holds and boasts the immeasurable mind.  
I feel as I were welcome to these trees  
After long months of weary wandering,  
Acknowledged by their hospitable boughs;  
They know me as their son, for side by side,  
They were coeval with my ancestors,  
Adorned with them my country's primitive times,  
And soon may give my dust their funeral shade.

## **Low Anchored Cloud**

By Henry David Thoreau

Low-anchored cloud,  
Newfoundland air,  
Fountain-head and source of rivers,  
Dew-cloth, dream-drapery,  
And napkin spread by fays;  
Drifting meadow of the air,  
Where bloom the daisied banks and violets,  
And in whose fenny labyrinth  
The bittern booms and heron wades;  
Spirit of lakes and seas and rivers,  
Bear only perfumes and the scent  
Of healing herbs to just men's fields!

## **The River Flows**

By Kailey Jennings

The river flows quiet and swift  
It twists and turns as the waters drift  
It branches and breaks—its fingers entwine  
It grows and grows—snakes like a vine.

The river with the soft scent of a calm day  
With the smell of clean—hanging—still—in the grey  
And sweetness carried on the breath of morning  
It caresses the river—the waters flowing.

The river—crystalline from winter melt  
And sweet with the summer soon felt  
It tastes of springtime—the season between  
And flows the river—so blue and clean.

The river—its lazy trickle of water  
The musical rhythm—the ocean's daughter  
It whispers and murmurs—a song of its own  
Playing over and over—in continuous drone.

The river—so clear and cool  
The water flows—the color like a jewel  
Its soft arms embrace the shore  
The river surging from the days before.

The river flows quiet and swift  
It twists and turns as the waters drift  
It branches and breaks—its fingers in twine  
It grows and grows—snakes like a vine.

## WHAT IS WATER?

In the space below, list 10 nouns that deal with water and/or water use.

- |          |           |
|----------|-----------|
| 1. _____ | 6. _____  |
| 2. _____ | 7. _____  |
| 3. _____ | 8. _____  |
| 4. _____ | 9. _____  |
| 5. _____ | 10. _____ |

From the list above, choose your favorite word (this will be the subject of your poem).

---

Now, choose any two adjectives you can think of to describe the noun you listed above:

\_\_\_\_\_

Next, choose three words which express the noun's action (past, present or future):

\_\_\_\_\_

\_\_\_\_\_

Choose four words which describe your feelings about the subject:

\_\_\_\_\_

\_\_\_\_\_

Pick a word that is a synonym to the subject:

\_\_\_\_\_

Now, put the words you've chosen all together and create a cinquain poem. Write it on the back of this page. See the example below:

Ocean  
Gray, rough  
Smashing, crashing, roaring  
I'm half afraid, you  
Sea

## Missouri River Poetry

Write some observations, experiences and feelings about your day canoeing the Missouri River. Think of adjectives and verbs which describe your experience on the river. Write down your thoughts and create a poem about your experience on the Missouri.

### THE MISSOURI RIVER

In the space below, list 6 nouns that could be used for the Missouri River.

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

From the list above, choose your favorite word (this will be the subject of your poem).

\_\_\_\_\_

Now, choose any two adjectives you can think of to describe the Missouri River:

\_\_\_\_\_

Next, choose three words which express the noun's action (past, present or future):

\_\_\_\_\_

\_\_\_\_\_

Choose four words which describe your feelings about the Missouri River:

\_\_\_\_\_

\_\_\_\_\_

Pick a word that is a synonym to the subject:

\_\_\_\_\_

Now, put the words you've chosen all together and create a cinquain poem; or write a different style of poem.

### EXTENSION:

Think of the many ways people use water, specifically, think about how you and your family use water. List those ways below. Then, think about the value of water to your community, your state, your nation, and throughout the world. Water is a precious commodity, and during times of drought, it can be a scarce resource. Think of ways you can conserve water and how you might encourage others to do so.





## WATER USE

### WAYS I USE WATER:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

### WAYS I CAN SAVE WATER:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

How can you encourage others in your family and community to conserve water?

“Water Poetry” and “Water Use” activities based on activities from Great Basin National Park Educator’s Guide:  
<http://www.nps.gov/grba/forteachers/curriculummaterials.htm>





## Hiking and Camping Word Scramble

You and your family plan to canoe, camp and hike the Missouri River Breaks area. But, before you can leave for your journey, you need to unscramble the words below in order to pack the items needed for your trip! HINT: Words found at the bottom of this page will help you with this word scramble!

nett \_\_\_\_\_

oecan \_\_\_\_\_

nusseern \_\_\_\_\_

ckckbaap \_\_\_\_\_

tawer \_\_\_\_\_

kngicoo tpo \_\_\_\_\_

cinbursla \_\_\_\_\_

lseepnig gab \_\_\_\_\_

doof \_\_\_\_\_

chantes \_\_\_\_\_

tah \_\_\_\_\_

oolcer \_\_\_\_\_

**Leave No Trace of Your Outdoor Adventure so that Others Can Enjoy  
Their Adventure, Too!**

Being outdoors camping, hiking, boating, wildlife watching, or enjoying other outdoor adventures is a great deal of fun! However, there are some guidelines you should follow so that you leave little or no clue of your outdoor visit. Leaving no trace helps the plants, animals and people who visit the area after you've been there.

### LEAVE NO TRACE PRINCIPLES

1. Plan ahead and prepare.
2. Travel and camp on hard surfaces.
3. Dispose of waste properly.
4. Leave what you find.
5. Be careful with fire.
6. Respect wildlife.
7. Be considerate of others.

To learn more about leaving no trace when you are hiking, camping, boating or doing other outdoor recreational pursuits, visit the Leave No Trace website: <http://www.lnt.org/>

### WORD SCRAMBLE WORD CHOICES:

backpack; cooking pot; sunscreen; cooler; hat; binoculars; sleeping bag; canoe; food; water; tent; matches.